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Italy and Sicily. Part Second contains a tabular view of the population of Sicily, in 1831, compared with the population of 1798; tables of the regular ecclesiastics of the island, existing at the end of 1832; and a bulletin of statistical statements, drawn from England, France, Germany, &c., and embracing, not only population, deaths, &c., but every kind of public improvement, such as bridges and railroads. In running our eye over the pages of this number, we have been struck with the extent and variety of the facts, so laboriously collected by the editors, and the scientific form in which they are arranged.

10. — *An Elementary Treatise on Plane and Solid Geometry.*

By BENJAMIN PEIRCE, A. M., University Professor of Mathematics and Natural Philosophy in Harvard University. Boston. James Munroe and Company. 1837. pp. 159.

IN mathematics, no less than in politics and most other things, there are two opposing principles which greatly influence the minds of men; the desire of improvement on the one hand, and the love of old things on the other. Accordingly, there are two sects or schools of mathematics; the lovers of what is commonly called the Old Geometry, who seem to consider the postulates, definitions, axioms, and reasoning of Euclid as the only safe instruments for the discovery or proof of mathematical truths; and the students of the Cartesian analysis, and its offspring, the Differential and Integral Calculus, who value the old Geometry only because it furnishes them with certain elementary truths, which serve as the basis of their further reasonings. With the latter school, the old Geometry is one of the door-stones at the entrance of the magnificent temple of mathematical science. The former are not content to use it for this purpose. They insist upon it, that they will go no further, unless they can have this identical door-stone to walk on all the way; and they stand, striving to carry or push it along with them, and with about as much success as a man might have, who should sagaciously attempt to lift himself in a basket, or by the waistband of his own unmentionables. Nay more, they not only stand still themselves, but they will have it that their neighbours, who have gone in to the interior of the temple, are not certainly there, cannot be rigorously proved to be there; and in fact, that having once stepped from the magic stone, they have lost forthwith all power of determining whether they go backward or forward, or whether they move at all.

The author of the book before us is of the modern school. He evidently considers it to be the proper function of the old Geometry, to furnish those elementary truths which are the basis of the modern analysis. Accordingly he has given in his treatise those theories which are useful for this purpose, and no more. The book is throughout simple, thorough, neat, and concise; and, as far as we can see, leaves nothing to be desired in this branch of mathematics.

The two most striking improvements are, the "Theory of Parallel Lines" and the use of the principles of the Infinitesimal Analysis. In the theory of parallel lines, the word *direction* is used without being defined, and by this means the difficulties which have been so much talked of in this part of Geometry have been avoided. This use of the word "direction" will probably be objected to by those, who will admit nothing to be sufficiently rigorous which is not in Euclid. But in fact it would be impossible to take a single step, without supposing the reader to be acquainted with some words. A late eminent judge, when wearied with the endless definitions and explanations of a prosy advocate, is said to have interrupted him with these words; "Mr. —, the Supreme Court of the United States may be *presumed* to know some things." The maxim is as true in Geometry as in law. If we are not mistaken, the term "direction" is used without a definition in Playfair's Euclid, in the Cambridge Translation of Legendre, and in Walker's Geometry; all excellent books. The doctrine of parallel lines as presented by Mr. Peirce, is concise, intelligible, and, in our judgment, entirely satisfactory.

The introduction of the Infinitesimal Analysis is, we think, a capital improvement. The Calculus has usually been considered to be an extremely difficult branch of mathematics; and there are doubtless many students who are sorely perplexed by it. Yet we cannot help thinking that the difficulty really lies in the manner in which the subject is presented, and not in the subject. The analogy between the circle and the regular polygon of an infinite number of sides can hardly fail to strike the mind of every student of Geometry; and it is probably because he is told that this mode of considering the subject is not sufficiently rigorous, and instructed to seek further satisfaction in a long process of reasoning, which in many cases only mystifies instead of convincing, that he finally concludes that the whole matter is a grave mystery, which it is in vain for him to try to comprehend; while if the idea which first existed in his mind had been properly developed, the whole would have been perfectly clear. It is not at all strange that a student, who, while a Freshman, has

been taught to distrust any particular mode of reasoning, should be startled when he finds himself called upon as a Junior or Sophomore to place entire confidence in it. And yet this is precisely the manner, in which the principles of the Calculus have been often treated. In mathematical studies, the student is always most embarrassed by the use of new methods; and it is therefore of great importance that this difficulty should be avoided as much as possible. The consideration of infinitely small quantities can hardly be dispensed with in mechanics, and the other branches of mixed Mathematics; and it is on this account important that the mind of the student should as soon as possible be made familiar with them.

As to the supposed want of rigor in this method, we cannot do better than by quoting a few words from Mr. Peirce's Preface. He says,

"There is no error; for if we suppose that there be an error which we may represent by A , since the aggregate of all the quantities neglected in arriving at the result is infinitely small, that is, as small as we choose, we may choose it to be smaller than A ; and therefore, the error A is greater than the greatest possible error which could be obtained, a manifest absurdity, but one which cannot be avoided as long as A is any thing."

It is remarkable, that this very reasoning is used by writers who affect great rigor, in finding the solidity of the pyramid. If any one doubts its correctness, we know of no more fit answer than the surly remark of Dr. Johnson; "Sir, I am bound to find you in reasons, but not in brains."

We have mentioned two points, in which we think that this book is an improvement upon its predecessors. But these are not the only improvements. Every page shows the same power of condensing, and the same neatness and elegance, for which the two works on Trigonometry, by the same author, are so remarkable.

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11. — *The Shipmaster's Assistant, and Commercial Digest; containing Information useful to Merchants, Owners, and Masters of Ships.* By JOSEPH BLUNT, Counsellor at Law. New York. Published by E. & S. W. Blunt. 1837. 8vo. pp. 683.

THIS is a very good book, though of an humble order of merit. It is plain, practical, and useful; but it is merely a dry digest of revenue laws of the United States, of some of the principles of commercial law, of the commercial regulations of different countries, and of some other matters of general com-